

Science for climate resilient development

Dr. Shiv Someshwar
Director Climate Policy, CGSD
Senior Advisor Regional Programs, IRI
The Earth Institute, Columbia University

ssomeshwar@ei.columbia.edu

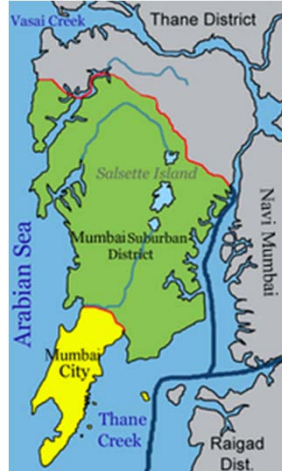
Presentation Guide

Climate risk reactive management – an illustration

Adaptation challenges, due current framing

Science for adaptation praxis

Greater Mumbai, India



Population 16 – 22 million (2010)

Slum population 56%

People / toilet in slums 56-273

Population without piped water 58%

Elevation of city Most parts <1m above SL

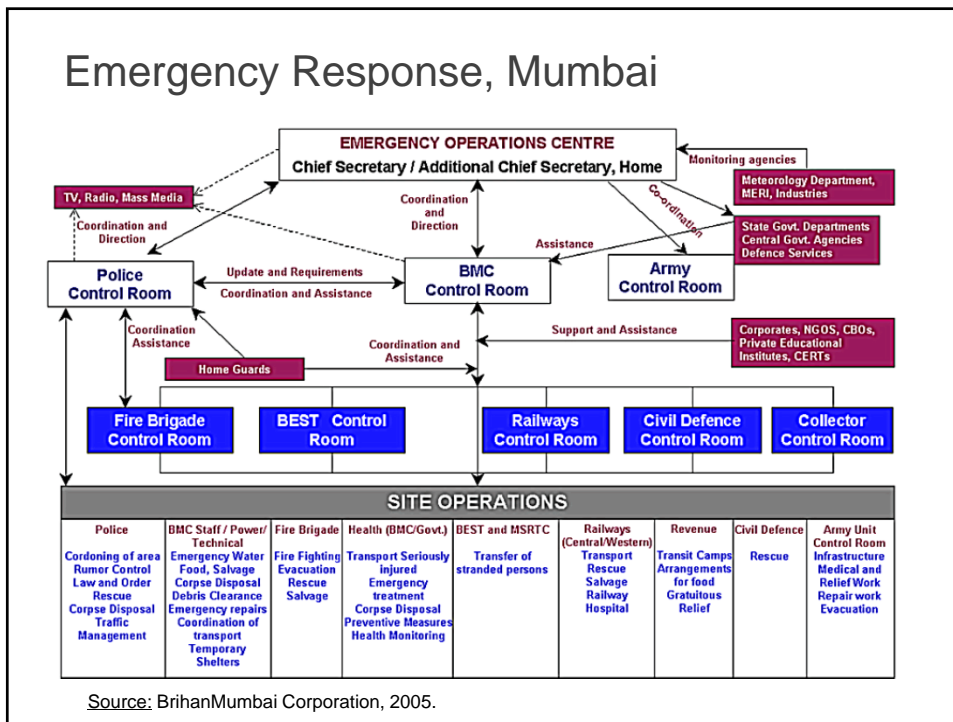
Annual rainfall >2 meters, June-Oct

Accounts >25% Industrial Output, 70% Capital Transactions of India, Home to *Bollywood* largest film industry in the world

Mumbai flood management, is reactive

- Flooding an “annual” event
 - “Chronic” in 40 neighborhoods
 - > 20 rail sections submerged annually
- Strong institutional “emergency” response
 - State led
 - Local area implementation
 - State funds disbursed

Emergency Response, Mumbai



2005 Mumbai Floods



- 994mm rainfall in 24 hours
- Mithi River overflow, arterial highway flooded
- Suburbs under 5 ms of water
- >630 deaths
- < 100,000 buildings badly damaged

Catastrophic impacts prevented by the emergency response system

<http://delhigreens.files.wordpress.com/2007/07/mumbai-floods-2005.jpg>

'Causes' of 2005 flood impacts: studies

Climate change (and more such events coming)

- Inadequate drainage (design 25mm/hour)
- Land use changes (built over holding ponds, hard surfacing, encroachment)
- <25% population in-migrated - housing
- Real estate development > powerful than local government
- Limits of response (threshold exceedance)

➔ **Dynamic nature of socio-economic vulnerability**
(climate AND non-climate drivers)

Adapting to climate change... 'industry' list

- Infrastructure planning/design (water supply, sea level/storm surge protection)
- Landscape systems planning (flood plain management)
- Land use regulated by plan (real estate development follows city plans!)
- Early warning systems (drought..)
- Risk transfer systems (index insurance...)

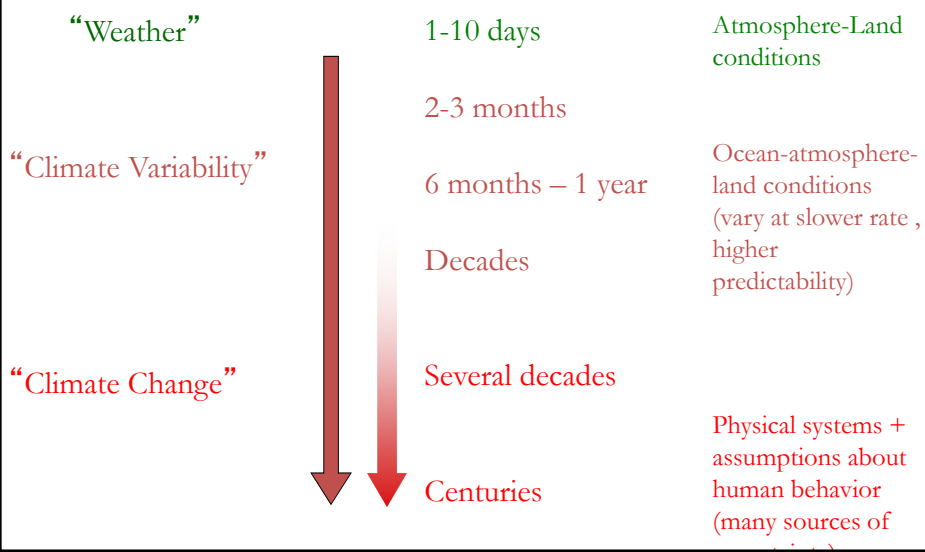
Climate change impacts are known/knownable

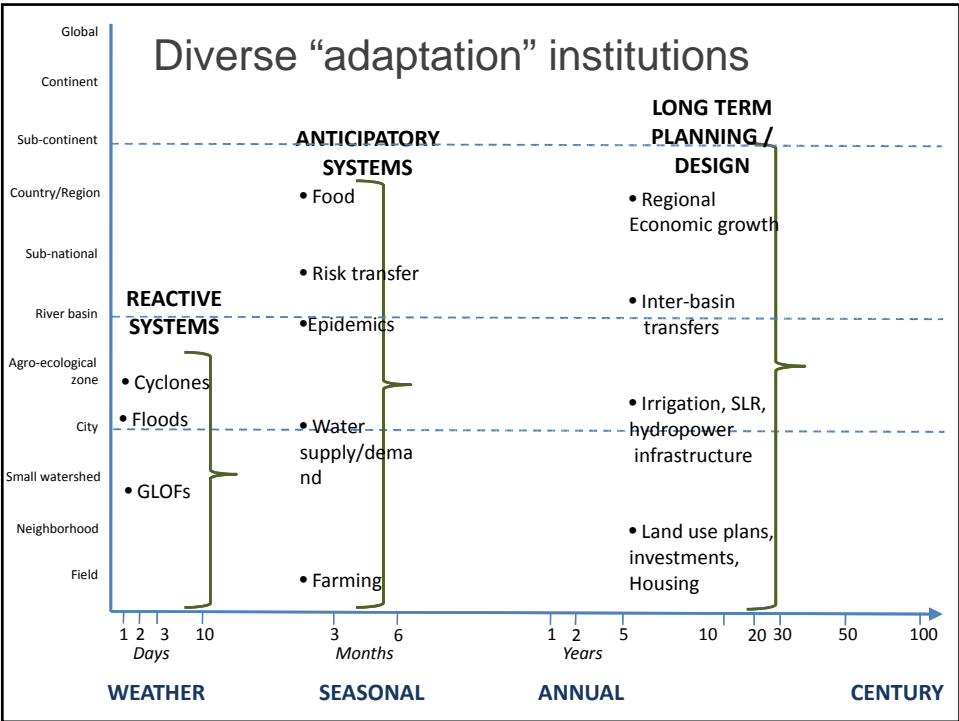
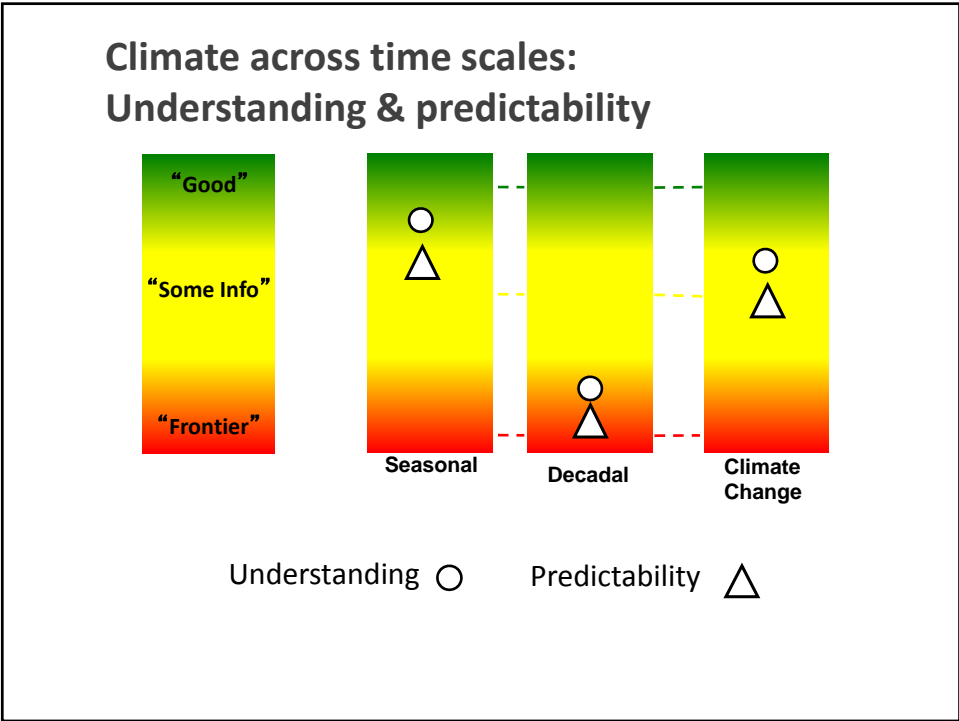
Science & knowledge for adaptation available on \$demand\$

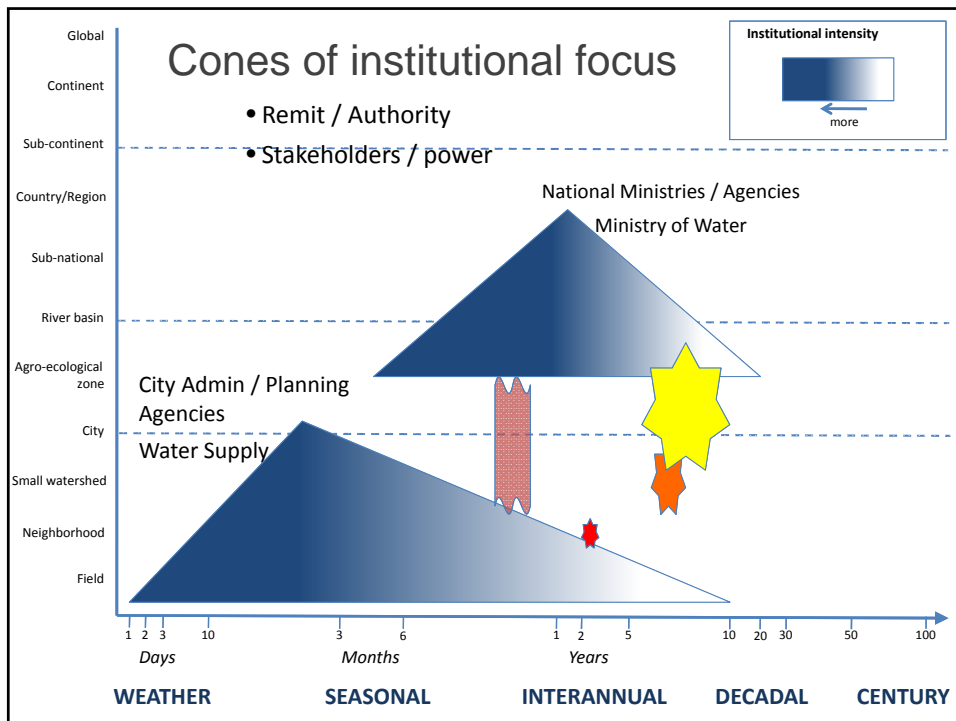
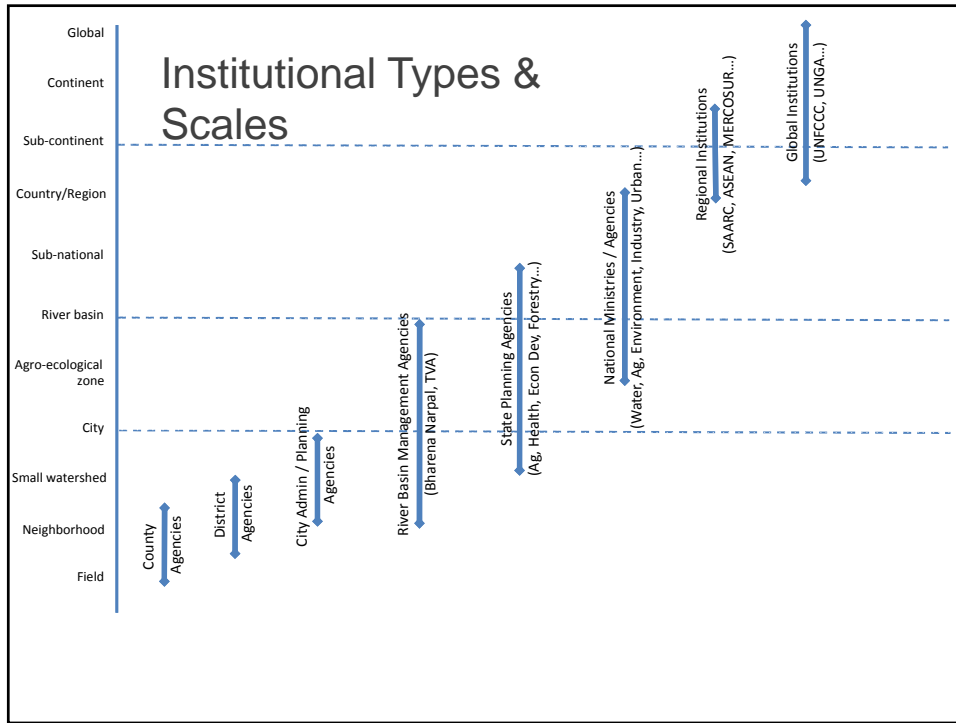
Some challenges for adaptation

- Anthropogenic driven climate impacts not distinct & measurable
- Impacts knowledge (when, where, and who) partial
- Multi-layered governance, many stakeholders, power inequity
- Non-congruence of institutional scales for policy-action (temporal & spatial)

Weather, climate variability & change







Towards solutions: some understanding

- Building climate resiliency in the NOW
- Policy makers indifferent on climate risk drivers (natural or anthropogenic)
- ‘Historic responsibility’ (& who will pay) spawned additionality strictures
- Climate resiliency includes adaptation & mitigation

Towards solutions: some understanding

- ‘Adaptation industry’ science
 - climate as single driver of risk (development in stasis)
 - often wrong (averaging model outputs or biased selection)
 - knowledge often not pertinent or useable
 - command & control mechanism
- Multiple drivers of vulnerability (who, where, when)
- Multiple sources of impacts & uncertainty (climate, socio-economic dynamics)
- Place-based adaptation reflecting socio-cultural practices, fighting inequities

Managing current climate risks **a good place to begin**

- Builds tools, models to better understand climate - development interactions/forcings
- Iterative feedback – systemic improvement (learning)
- Institutional capacity anticipates/manages risks
- Valuable suite of resources for adapting to climate change

Till recently ignored in adaptation – focus on the distant future

Accessing (best + relevant) science

- Not only downscaled GCMs – often miss multi-decadal natural CV
- Not only complex coupled models (biophysical, socioeconomic) – relevance for place-based economies
- Not only global economic scenarios (A1, B2..) – need to respond to national development aspirations
- Climate is but one driver of development risk – trade, migration, remittance, sanctions
- Not only simple adaptation projections – transformative, aspirational (export power, new urbanism, new social contract)

National adaptation “needs” ill-served in current system?

- Designed for mitigation - countries as instruments whose behavior is to be changed for global public good (reduced GHGs)
- Global level of institutions articulate lower scales of responsibility
- Dialectics of (obligation) dilemma – global long term responsibility/national short term demands
- Science valued for large scale truths, less for place-based policy making

Post-Cancun - adaptation

- Much the same?
 - Adaptation Committee
 - Global choreography of industrialized, developing, LDCs
 - Control takes primacy over function
 - Kyoto Protocol main focus of COP17?
 - Finance for Green wash?
 - Science for praxis is marginal

Advancing Adaptation Praxis

- Identify what national policymakers need (water supply, agriculture, low carbon urban, pastoral...)
- Focus on “region” - unified demand node
 - for global science, \$\$, best/worst practices
 - assert control over their deployment
- Target current socio-economic vulnerabilities
 - Science / K / technologies / practices
- Build on what is good regionally/nationally – ACRI, CG Centers, national universities, sectoral networks

\$500 million / year available for adaptation in the Arab Region – no strings!

Significant amount, yet nowhere enough

- What to spend it on, with what returns?
- Who are the stakeholders?
- Whose needs should be prioritized?

Diverse interests, Multiple scales, Equity, Science?